In the Claims

For the convenience of the Examiner, all pending claims are set forth below, whether or not an amendment is made. Please amend the claims as follows:

1.   **(Currently Amended)** A method for simulating a flow field, the method comprising:

receiving a set of user inputs associated with a flow field;

electronically determining a set of initial conditions for the flow field based at least on the received set of user inputs;

electronically generating a grid comprising a plurality of cells, each cell associated with a set of variables ~~for~~ describing ~~an unsteady~~ **a portion of the** flow field **at that cell**;

at each of a predetermined plurality of steps, using a computerized computational fluid dynamics (CFD) solver to calculate ~~calculating~~ a value for each variable ~~of~~ **associated with** each cell ~~from~~ **based at least on** a previous value **calculated at the previous step for that variable associated with that cell** ~~at each period for a predetermined number of periods~~ by applying a flow field function to the previous value**, at least a portion of the calculated values being calculated based at least on the set of electronically determined initial conditions;**

electronically recording the values calculated at periodic ones of the plurality of steps such that the values calculated at only a portion of the steps are recorded;

electronically averaging the ~~calculated~~ values **recorded at the periodic steps** for each variable of each cell to yield an averaged value for each variable; and

determining the ~~unsteady~~ flow field from the averaged values.

2.   (Original) The method of Claim 1, wherein the grid describes a bay of an aircraft.

3.   (Original) The method of Claim 1, further comprising determining a transient period for the values.

4.   (Original) The method of Claim 1, wherein the flow field function comprises a Navier-Stokes function.

5.   (Original) The method of Claim 1, wherein:

each period comprises a plurality of steps; and

calculating the value for each variable of each cell comprises:

      computing the value for each variable of each cell at each step; and

      recording the value at a predetermined number of steps.

6.   (Original) The method of Claim 1, wherein the periods for the cells are substantially equivalent.

7.   (Original) The method of Claim 1, wherein a larger cell has a period less than a period for a smaller cell.

8.   (Original) The method of Claim 1, further comprising:

adjusting the averaged values to a survey grid; and

applying a simulation process to the adjusted values.

9.   (Original) The method of Claim 1, wherein the set of variables comprises at least one velocity variable, a pressure variable, and a temperature variable.

10.   (Original) The method of Claim 1, wherein the set of variables comprises at least one momentum variable, a density variable, and an energy variable.

11.   **(Currently Amended)**   A method for simulating a flow field, the method comprising:

receiving a set of user inputs associated with a flow field;

electronically determining a set of initial conditions for the flow field based at least on the received set of user inputs;

electronically generating a grid comprising a plurality of cells, each cell associated with a set of variables ~~for~~ describing a **portion of the** flow field **at that cell**;

at each of a predetermined plurality of periods, calculating a value for each variable ~~of~~ **associated with** each cell ~~from~~ **based at least on** a previous value **calculated at the previous period for that variable associated with that cell** ~~at each period for a predetermined number of periods~~ by applying a Navier-Stokes function to the previous value**, at least a portion of the calculated values being calculated based at least on the set of electronically determined initial conditions**, wherein a larger cell has a period less than a period for a smaller cell;

electronically recording the values calculated at periodic ones of the plurality of steps such that the values calculated at only a portion of the steps are recorded;

electronically averaging the ~~calculated~~ values **recorded at the periodic steps** for each variable of each cell to yield an averaged value for each variable;

adjusting the averaged values to a survey grid; and

applying a simulation process to the adjusted values.

12.   (Original)   The method of Claim 11, wherein the grid describes a bay of an aircraft.

13.   (Original)   The method of Claim 11, further comprising determining a transient period for the values.

14.   (Original) The method of Claim 11, wherein:

each period comprises a plurality of steps; and

calculating the value for each variable of each cell comprises:

  computing the value for each variable of each cell at each step; and

  recording the value at a predetermined number of steps.

15.   (Original) The method of Claim 11, wherein the set of variables comprises at least one velocity variable, a pressure variable, and a temperature variable.

16.   (Original) The method of Claim 11, wherein the set of variables comprises at least one momentum variable, a density variable, and an energy variable.

17.   **(Currently Amended)** A system for simulating a flow field, the system comprising:

a grid generator **electronically** generating a grid comprising a plurality of cells, each cell associated with a set of variables ~~for~~ describing a **portion of the** flow field **at that cell**;

a flow field module coupled to the grid generator, the flow field module **using a computerized computational fluid dynamics (CFD) solver to calculate, at each of a predetermined plurality of steps,** ~~calculating~~ a value for each variable ~~of~~ **associated with** each cell ~~from~~ **based at least on** a previous value **calculated at the previous step for that variable associated with that cell** ~~at each period for a predetermined number of periods~~;

a recording module operable to electronically record the values calculated at periodic ones of the plurality of steps such that the values calculated at only a portion of the steps are recorded; and

an averaging module coupled to the flow field module, the averaging module **electronically** averaging the ~~calculated~~ values **recorded at the periodic steps** for each variable to yield an averaged value for each variable.

18.   (Original) The system of Claim 17 wherein the flow field module calculates a value for each variable by applying a flow field function to the previous value.

19.   (Original) The system of Claim 18, wherein the flow field function comprises a Navier-Stokes function.

20.   (Original) The system of Claim 17, wherein the periods for the cells are substantially equivalent.

21.   (Original) The system of Claim 17, wherein a larger cell has a period less than a period for a smaller cell.

22.   (Original) The system of Claim 17, further comprising:

an interpolation module coupled to the averaging module, the interpolation module adjusting the averaged values to a survey grid; and

a simulation module coupled to the interpolation module, the simulation module applying a simulation process to the adjusted values.

23.   **(Currently Amended)**   A system for simulating a flow field, the system comprising:

a grid generator **electronically** generating a grid comprising a plurality of cells, each cell associated with a set of variables ~~for~~ describing a **portion of the** flow field **at that cell**;

a flow field module coupled to the grid generator, the flow field module calculating**,** **at each of a predetermined plurality of periods,** a value for each variable ~~of~~ **associated** **with** each cell ~~from~~ **based at least on** a previous value **calculated at the previous period** **for that variable associated with that cell** ~~at each period for a predetermined number of~~ ~~periods~~ by applying a Navier-Stokes function to the previous value**, at least a portion of the** **calculated values being calculated based at least on the set of electronically determined** **initial conditions**, wherein a larger cell has a period less than a period for a smaller cell;

an averaging module coupled to the flow field module, the averaging module **electronically** averaging the ~~calculated~~ values **recorded at the periodic steps** for each variable to yield an averaged value for each variable;

an interpolation module coupled to the averaging module, the interpolation module adjusting the averaged values to a survey grid; and

a simulation module coupled to the interpolation module, the simulation module applying a simulation process to the adjusted values.